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# New Onychiurid Collembola from India and New Guinea

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*Abstract*

A new genus and species of Onychiuridae and new species of *Paratullbergia* from India, together with a new species of *Protaphorura* from New Guinea are described.

THE material from India which forms the subject of this paper was sent to me for identification by Professor K. K. Nayar, University College of Trivandrum, and was collected by Mr N. R. Prabhoo after both of whom the new genus and its species are named.

The material from New Guinea came to me from Dr J. J. H. Szent-Ivany of the Department of Agriculture, Port Moresby.

Family: TULLBERGIINAE

Genus: PARATULLBERGIA Womersley, 1930

**Paratullbergia indica** n.sp. Figs. 1–7

*Colour*: White.

*Clothing*: Rather sparse of moderately long simple setae; a little longer on Abds. V and VI.

*Body*: Length up to .5mm. Antennae shorter than the head as 75 : 100. Ant. IV bearing on apical half 4–5 stout, curved, tapering sense rods and 4–5 slender sense rods; basal half rather sparsely clothed with setae; the setae and both types of sense rods all of about equal length (Fig. 2). Sense organ of Ant. III with two stout, curved sense clubs bent towards one another and situated behind three rather coarsely granulated, and irregularly shaped, papillae flanked by two guard setae (Fig. 3); mandible with single apical tooth and molar area; maxilla with two apical teeth and three lamellae (Fig. 7). PAO elongate, subequal in length to width of Ant. I and consisting of 22 to 24 vesicles as shown in Fig. 3. Pseudocelli as in Fig. 3 and arranged as follows:—

| | |
|---|---|
| Ant. Base | 1 + 1 |
| Posterior margin head | 1 + 1, each with a guard seta alongside outer edge. |
| Th. I | 0 + 0 |
| Th. II & Th. III | 1 + 1 each |
| Abds. I – V | 1 + 1 each |
| Abd. VI | 0 + 0 |

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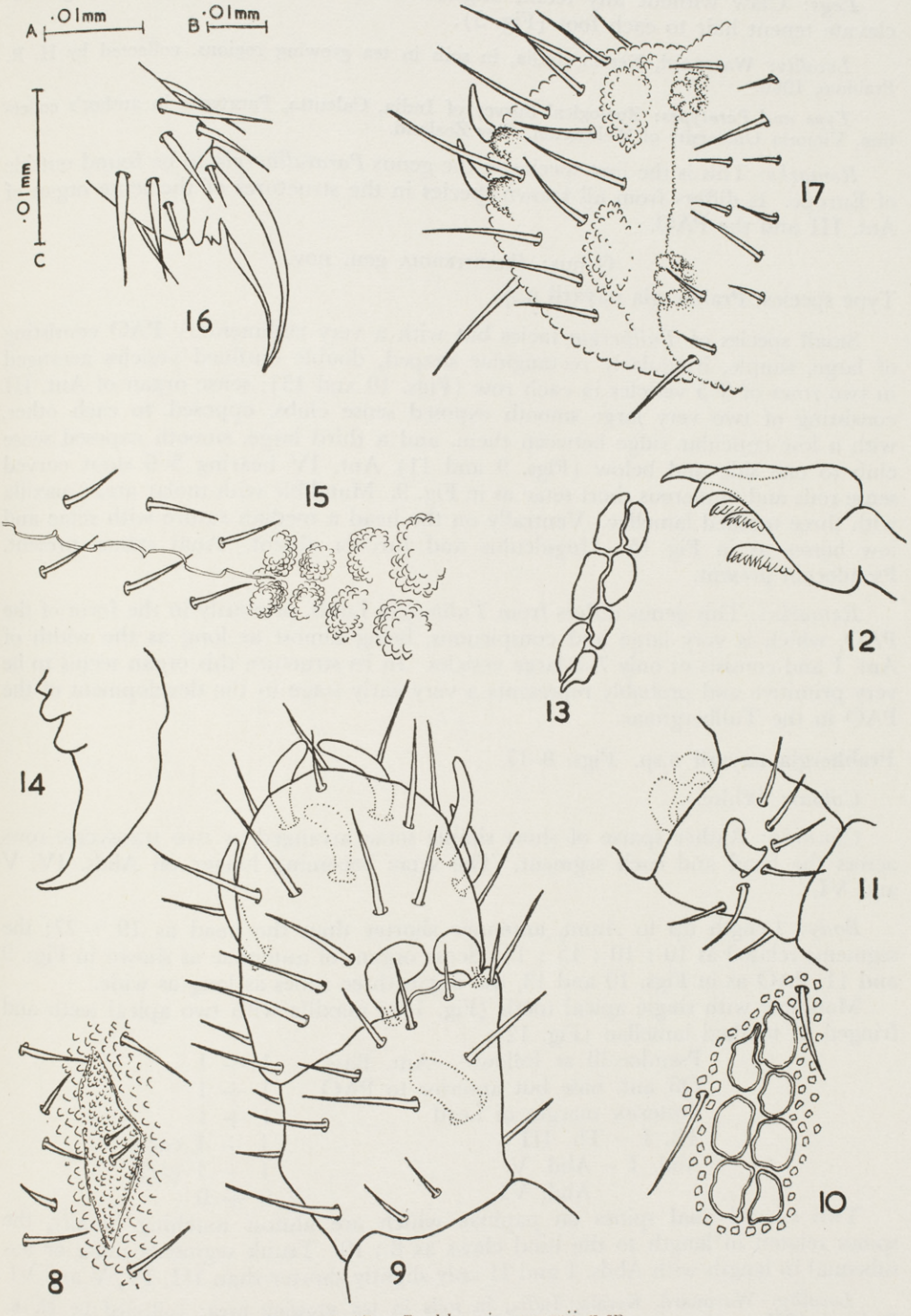
Abd. VI with chitinous ridges, a pair of curved anal spines on papillae, almost touching at their bases, and six setae all arranged as in Fig. 4. The anal spines without the papillae subequal to the hind claw in length. Genital aperture as in Fig. 6.

Plate 1

Figs. 1–7.—*Paratullbergia indica* n.sp.

Fig. 1.—Sense organ Ant. III. Fig. 2—Apex of Ant. IV. Fig. 3—Pseudocellus of antennal base and PAO. Fig. 4—Abd. VI from above. Fig. 5—Hind foot. Fig. 6—Genital aperture. Fig. 7—Mandible and maxilla. Scale A, figs. 1–3 and 7; Scale B. fig. 5; Scale C, figs. 4 and 6.

PLATE 2




FIGS. 8–17.—*Prabhergia nayarii* n.sp.

FIG. 8.—Genital aperture. Fig. 9—Ants. II and III. Fig. 10—PAO of Type. Fig. 11—Ant. III showing accessory club of sense organ. Fig. 12—Maxilla. Fig. 13—PAO from a paratype. Fig. 14—Head of mandible. Fig. 15—Bosses and suture from ventral surface of head. Fig. 16—Hind claw. Fig. 17—Abds. V and VI from above showing pseudocelli of Abd. V. Scale A, figs. 8, 11 and 15; Scale B, fig. 17, Scale C, figs. 9–10, 12–14 and 16.

*Legs*: Claw without any teeth, unguiculus reduced, seta like: a strong non-clavate tenent hair to each foot (Fig. 5).

*Locality*: Wayanard, Kerala, India, in soils in tea growing regions. collected by H. R. Prabhoo, 1960.

*Type and Paratypes*: Zoological Survey of India, Calcutta, Paratypes in author's collection, Victoria University of Wellington, New Zealand.

*Remarks*: This is the first species of the genus *Paratullbergia* to be found outside of Europe. It differs from all known species in the structures of the sense organ of Ant. III and the PAO.

Genus: PRABHERGIA gen. nov.

Type species: **Prabhergia nayarii** n.sp.

Small species of *Tullbergia* facies but with a very rudimentary PAO consisting of large, simple, irregularly rectangular shaped, double outlined vesicles arranged in two rows of 3–5 vesicles in each row (Figs. 10 and 13); sense organ of Ant. III consisting of two very large smooth exposed sense clubs, opposed to each other, with a low cuticular ridge between them, and a third large, smooth exposed sense club to one side and below (Figs. 9 and 11) Ant. IV bearing 5–6 stout curved sense rods and numerous short setae as in Fig. 9. Mandible with molar area; maxilla with three toothed lamellae. Ventrally on the head a median suture with setae and low bosses as in Fig 15. Unguiculus and furcula absent. Anal spines present. Pseudocelli present.

*Remarks*: This genus differs from *Tullbergia* Lubb. primarily in the form of the PAO, which is very large and conspicuous, being almost as long as the width of Ant. I and consists of only 7–8 large vesicles. In its structure this organ seems to be very primitive and probably represents a very early stage in the development of the PAO in the Tullbergiinae.

**Prabhergia nayarii** n.sp. Figs. 8–17

*Colour*: White.

*Clothing*: Rather sparse of short simple setae arranged as two transverse rows across the head and each segment. The setae becoming longer on Abds. IV, V and VI.

*Body*: Length up to .4mm, antennae shorter than the head as 19 : 27; the segments related as 10 : 10 : 15 : 15. Sense organs of antennae as shown in Figs. 9 and 11, PAO as in Figs. 10 and 13, the organ three times as long as wide.

Mandible with single apical tooth (Fig. 14); maxilla with two apical teeth and fringed or toothed lamellae (Fig. 12).

| | |
|---|---|
| Pseudocelli as follows:—Ant. Base | 1 + 1 |
| Off ant. base but anterior to PAO | 1 + 1 |
| Posterior margin of head | 1 + 1 |
| Th. I – Th. III | 1 + 1 each |
| Abd. I – Abd. V | 1 + 1 each |
| Abd. VI | 0 + 0 |

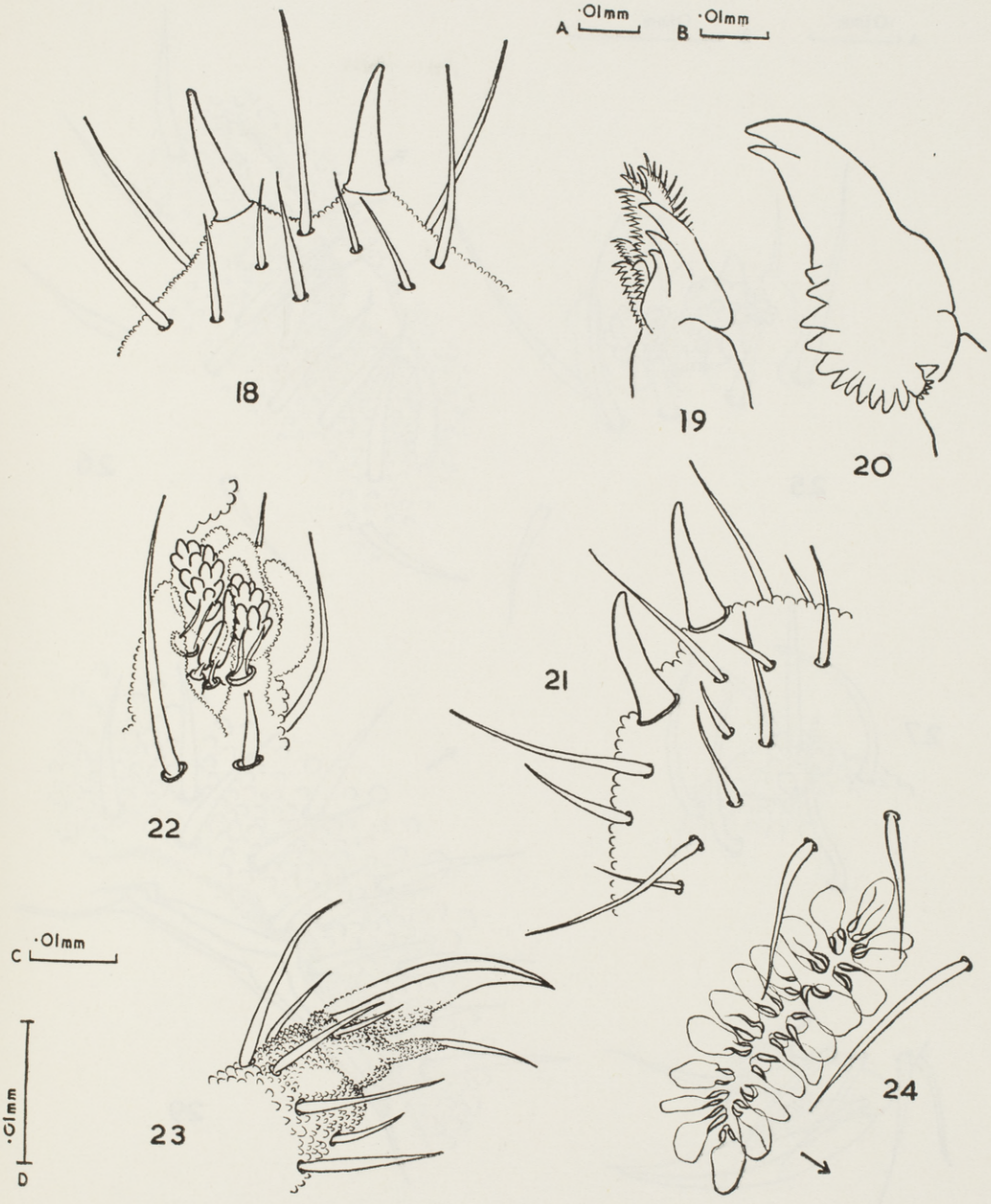
Two curved anal spines on papillae which are almost touching basally, the spines related in length to the hind claws as 8 : 10. Trunk segments more or less subequal in length with Abds. I and II only slightly shorter than III, IV, V and VI.

*Locality*: Wayanard, Kerala, India, in soils in tea growing area; collected by H. R. Prabhoo, 1960.

*Type and Paratypes*: Zoological Survey of India, Calcutta.

*Paratypes*: Author's collection, Victoria University of Wellington, New Zealand.

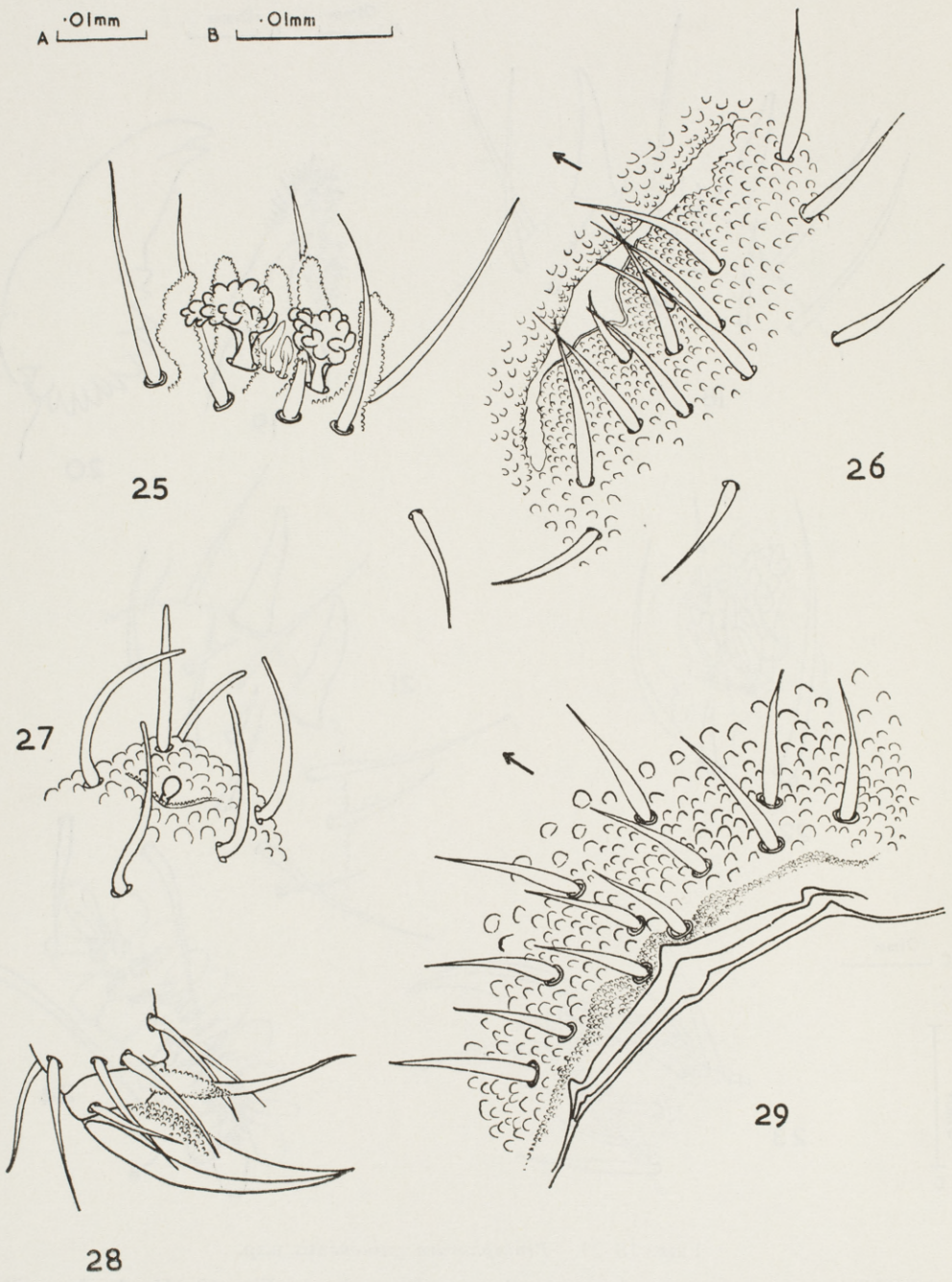
PLATE 3




FIGS. 18–24.—*Protaphorura guineaensis* n.sp.

FIG. 18.—Anal spines and associated setae from above. Fig. 19—Head of maxilla. Fig. 20—Head of mandible. Fig. 21—Anal spines and associated setae in oblique view. Fig. 22—Sense organ Ant. III from side. Fig. 23—Front foot. Fig. 24—Postantennal organ. Scale A, figs. 18; Scale B, figs. 19–21; Scale C, figs. 23; Scale D, figs. 22, 24.

Plate 4




Figs. 25–29, *Protaphorura guineaensis* n.sp.

Fig. 25—Sense organ Ant. III. Fig. 26—Male genital aperture. Fig. 27—Subapical sense club of Ant. IV. Fig. 28—Hind foot. Fig. 29—Female genital aperture. Scale A, fig. 28; Scale B, figs. 25–27, 29.

Genus: PROTAPHORURA Absolon, 1901

**Protaphorura guineaensis** n.sp. Figs. 18–29

*Colour*: White.

*Clothing*: Rather sparse of short simple setae with moderately long simple setae interspersed amongst them; the setae of Abds. V and VI longer.

*Body*: Length up to 1.3mm. Antennae slightly shorter than the head as 21 : 28. Ant. IV with subapical pit containing a small sense club surrounded by 5–6 long slender surved sense rods (Fig. 27). Ant. IV more heavily clothed with short simple setae than any other antennal segments. Sensory organ of Ant. III with five irregular shaped cuticular papillae, five guard setae, two very coarsely granulated sense clubs and two spathulate sense rods arranged as shown in Figs. 22 and 25. PAO with 25–26 vesicles having very distinct attachment zones as shown in Fig. 24. The mandible with two stout apical teeth and molar area consisting of several strong, broad, raised ridges running parallel across it; maxilla with three stout apical teeth, two supra apical fringed lamellae, one supra apical toothed lamella and three subapical toothed lamellae (Figs. 19–20). The PAO almost as long as the width of Ant. I.

Pseudocelli arranged as follows:—

| | |
|---|---|
| Ant. base | 3 + 3 |
| Posterior margin of head | 2 + 2 |
| Th. I | 2 + 2 |
| Th. II & Th. III | 3 + 3 each |
| Abds. I – V | 3 + 3 each |
| Abd. VI | 0 + 0 |

Antennal base area with smaller more closely packed granules than remainder of head. Genital apertures of male and female as shown in Figs. 26 and 29 respectively. Abd. VI with two long, fairly straight anal spines without papillae and ten dorsal setae arranged as in Figs. 18 and 21. The anal spines about two-thirds the length of the hind claw.

*Legs*: Claw without any teeth but claw and unguiculus both distinctly granulated basally. Unguiculus needle-like, almost as long claw on hind feet, slightly shorter on other feet. A long basal seta to each side of claw (Figs. 23 and 28).

*Locality*: Aiyura Agricultural Experimental Station, New Guinea Highlands, around roots of *Leucaena globiata*. Collected by R. S. Carne.

*Type*: Dominion Museum, Wellington, New Zealand.

*Paratypes*: Author's collection, Victoria University of Wellington, New Zealand; British Museum, Natural History, London.

*Remarks*: This interesting species differs from the known species by virtue of the structures of the claw, unguiculus, mandibles and maxillae. It would appear to be closest related to *Protaphorura tomuraushensis* (Yosii) from Japan.

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